

CLAIMS

WHAT IS CLAIMED IS:

1. A method for forming an illuminated design on a substrate, said method comprising the steps of:
 - 5 forming a first electrode on the substrate, the first electrode defining a first perimeter;
 - forming a dielectric layer on the substrate and the first electrode, the dielectric layer extending beyond the first perimeter of the first electrode,
 - forming a phosphor layer on the dielectric layer, the phosphor layer extending
 - 10 on less than the entire dielectric layer to define an exposed dielectric layer;
 - forming a sealing layer on at least a portion of said exposed dielectric layer;
 - forming a conductor layer on the phosphor layer; and
 - forming a second outlining electrode on the sealing layer to transport energy to
 - 15 the conductor layer and phosphor layer.
2. A method in accordance with Claim 1 wherein said step of forming a second outlining electrode comprises the step of screen printing a front electrode layer such that a portion of the front electrode layer contacts an outer perimeter of the conductor layer.
- 20 3. A method in accordance with Claim 1 wherein the substrate is a sign having a front surface, said step of forming the first electrode on the substrate comprises the step of screen printing a rear electrode to the front surface of the sign.
4. A method in accordance with Claim 1 wherein said step of forming a phosphor layer comprises the step of screen printing the phosphor layer onto the
- 25 dielectric layer, the phosphor layer having substantially the same shape and size as the illuminated design.
5. A method in accordance with Claim 1 wherein said step of forming a conductor layer over the phosphor layer comprises the step of screen printing a conductive ink over the phosphor layer as a forward image having substantially the
- 30 same shape and size as the illuminated design.

6. A method in accordance with Claim 1 further comprising the step of forming an ultraviolet coating on the substrate so that the ultraviolet coating substantially covers the conductor layer.
7. A method in accordance with Claim 1 further comprising the step of forming an ultraviolet coating on the substrate before forming the rear electrode on the substrate.
8. A method in accordance with Claim 1 further comprising the step of printing a background on the substrate.
9. A method in accordance with Claim 1 further comprising the step of installing the substrate on a vending machine.
10. A method in accordance with Claim 1 further comprising the step of installing the substrate on a bicycle helmet.
11. A method in accordance with Claim 1 further comprising the step of installing the substrate on a slot machine.
12. A method in accordance with Claim 1 further comprising the step of attaching the substrate to a road sign.
13. A method for forming an integral electroluminescent lamp and display sign, the display sign including a surface, said method comprising the steps of:
forming a first electrode on the surface of the sign;
forming a conductor layer on the first electrode and the surface of the sign;
screen printing a phosphor layer on the conductor layer;
forming a second electrode on the sign surface and the phosphor layer; and
forming a reflective coating on the sign surface and second electrode.
14. A method in accordance with Claim 13 wherein the step of forming a first electrode comprises the step of screen printing the first electrode to the surface of the sign.
15. A method in accordance with Claim 13 wherein the sign is fabricated from substantially clear plastic and includes a rear surface, and wherein the step of

forming a first electrode on the surface of the sign comprises the step of screen printing a front electrode on the rear surface of the sign.

16. A method in accordance with Claim 15 wherein the sign further includes an illumination area, said method further comprising the step of screen printing a background layer over the sign surface, the background layer including an illumination portion substantially aligned with the illumination area.

17. A method in accordance with Claim 16 wherein said step of forming a first electrode comprises the step of screen printing a first electrode onto the sign surface such that the first electrode contacts an outer perimeter of the illumination portion.

18. A method in accordance with Claim 13 wherein said step of forming a conductor layer comprises the step of screen printing a layer of indium tin oxide onto the sign surface.

19. A method in accordance with Claim 13 wherein said step of forming a conductor layer comprises the step of screen printing a layer of a nonmetallic conductor onto the sign surface.

20. A method in accordance with Claim 19 wherein said step of forming a conductor layer comprises the step of screen printing a transparent and translucent layer of a non-metallic conductor onto the sign surface.

21. A method in accordance with Claim 19 wherein said step of screen printing a layer of non-metallic conductor onto the sign surface comprises the step of screen printing a layer of poly-phenylene-amine-imine onto the sign surface.

22. A method in accordance with Claim 13 wherein said step of forming a second electrode comprises the step of screen printing a rear electrode onto the phosphor layer.

23. A method in accordance with Claim 13 further comprising the step of screen printing a UV coating to the sign rear surface over the first electrode, the conductor layer, the phosphor layer, and the second electrode layer.

24. A method in accordance with Claim 13 further comprising an initial step of printing a background substrate onto the surface of the sign.